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ABSTRACT

A one-day conference was held at the University of New South Wales in Australia to consider alternatives to the Higher School Certificate as a college selection device. The first address was by L. H. T. West, who outlined some of the current controversies in the debate about selection and presented evidence that pointed to serious weaknesses in the procedure in most common use in Australia. J. Beauchamp spoke from his experience as an admissions officer and stressed the need for a more humane and individual approach, and R. Campbell described the development of the school-based selection system that has just been adopted by the Australian National University. K. Mitchell gave an account of the complex and radical system that will be used to select the first intake of medical students at the University of Newcastle, and J. Frederich considered the problem from the viewpoint of the secondary schools and concluded that community attitudes are such that any system that is not based upon a public examination will have little prospect of being accepted. (SW)

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SELECTION FOR UNIVERSITY - ALTERNATIVES TO THE H.S.C.

Proceedings of a Conference held on 21st June 1977 at the University of New South Wales

U S DEPARTMENT OF HEALTH EDUCATION & WELFARE NATIONAL INSTITUTE OF EDUCATION

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Edited by J.P. POWELL

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TERTIARY EDUCATION RESEARCH CENTRE
UNIVERSITY OF NEW SOUTH WALES

CONTENTS

		Page
J.P. Powell	Introduction	iii
L.H.T. West	Tertiary selection - some elements of the debate	1
J. Beauchamp	Some assumptions in university admissions	10
R. Campbell	The A.N.U's admissions package . .	16
K. Mitchell	Selection of the 1978 medical intake at the University of Newcastle . .	29
J. Frederich	Tertiary selection and the schools .	34
Contributors	. . . . .	38

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INTRODUCTION

J. P. POWELL

Since the end of the second world war the demand for university places has greatly exceeded the supply and the problem of who to select and how best to do it has never been satisfactorily resolved despite a very large number of research studies concerned with relating selection criteria to subsequent academic performance. It would probably be true to say that this topic has received a far larger investment of research effort than the complex - and more important - set of questions associated with what and how students should be taught once they have gained entry. The results have been disappointing and somewhat wearying in their repetitiveness, suggesting that we may have been seeking the answers to the wrong questions.

Now, when the demand for places shows clear signs of slackening and the competition is becoming less fierce, there is evidence of a growing willingness to experiment and to seek selection criteria which do not rely solely upon a number computed from the results of an end of school examination. The latter had the virtues of simplicity and administrative convenience but little else to recommend it and its defects have become increasingly widely recognized.

A one-day conference was held at the University of New South Wales on 21st June 1977 to consider alternatives to the Higher School Certificate as a selection device. It was opened by West who outlined some of the current controversies in the debate about selection and presented evidence which pointed to serious weaknesses in the procedure in most common use in Australia. Beauchamp spoke from his experience as an admissions officer and stressed the need for a more humane and individual approach. Campbell described the development of the school-based selection system which has just been adopted by the Australian National University. Mitchell gave an account of the complex and radical system which will be used to select the first intake of medical students at the University of Newcastle. Finally, Frederich considered the problem from the viewpoint of the secondary schools and concluded that community attitudes are such that any system which is not based upon a public examination will have little prospect of being accepted.

The papers provoked lively and vigorous discussion at the conference and the proceedings have been edited into their present form in the expectation that they will be of interest to a wider audience and in the hope that they will help to carry the debate forward.

Special thanks are due to George Pashuk and Paul Finlay for arranging tape-recording facilities, to Peter Madden for transcribing the tapes, and to Annie Williams for typing the edited transcripts.

TERTIARY SELECTION : SOME ELEMENTS OF THE DEBATE

L.H.T. WEST

What I said I would try to do for this conference was to take the many arguments and controversies related to the question of tertiary selection and group them into categories. I think that when we disagree on many of these issues, we are thinking about different aspects of the problem: so I should try to isolate the arguments in the hope that this will help us to agree, or to see where we disagree, on the whole issue.

Most of the arguments about selection seem to be concerned with one of the following categories.

(a) Efficiency or wastage - Are we selecting the students that are most likely to succeed? Is our selection procedure keeping the wastage rate down?

(b) Influence on the school - university interface. What is the function and the responsibility of schools towards universities? What effect has the selection procedure on the secondary school? What effect has it on tertiary institutions?

(c) Fairness. Is a particular selection procedure fair or unfair? To whom?

(d) What administrative problems are created by a selection procedure?

(e) Other. Any classification is artificial, so I have included an "other" category.

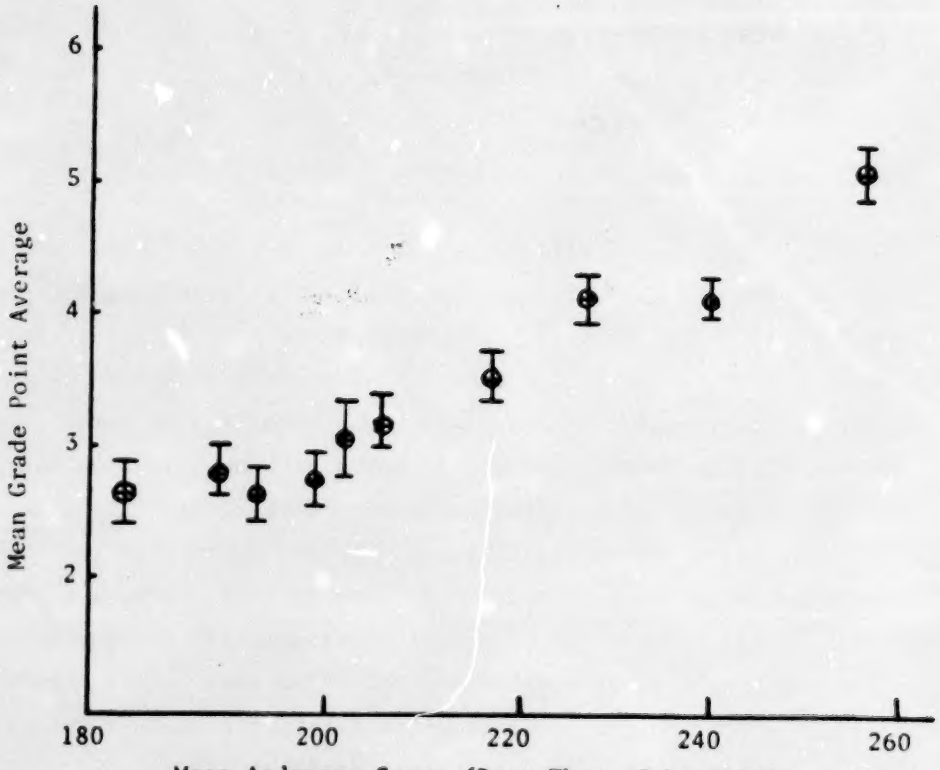
Let us now look at some of these in more detail.

Questions of efficiency represent a real problem. We cannot actually evaluate the efficiency of a selection procedure because we do not know how the people we have excluded would have performed if we had let them in. Over the years there have been two major ways in which research studies have attempted to make inferences about the performance of these people. The first one has been to correlate the selection score with performance at the university. We ought to recognise that this involves an extrapolation: we are going to extrapolate from these people who have been selected to those who have not. And in fact, because a correlation coefficient is usually calculated, the extrapolation is a linear one. What we measure when we measure a correlation coefficient between the selection score and the performance in first year is an index of the linear relationship between those two variables.

If we then use the correlation coefficient to say that students who have scores below the cut off are not likely to succeed we are involving ourselves in an extrapolation. Now that is fine provided we understand what we are doing. If we were dealing with some area of science, where extrapolation is used a lot, then one of the things we would do is to check if a linear extrapolation was a reasonable thing to use (e.g. by plotting the available data). Perhaps we should do this with our selection data too. In this case we are going to get a scatter diagram which may be difficult to interpret. One way to overcome this would be to group scores together - say into deciles (this procedure is something called "binning"). An example for Monash engineering students is shown in Figure 1. Along the bottom I have plotted the mean Anderson score, which at that stage (this is for 1972 entrants) was the composite score of the best three subjects in the Higher School Certificate with some small perturbations of that. I have divided the entrants into ten groups and looked at their mean Anderson score plotted against their grade point average at the end of first year. The error bars are the standard errors of the mean. Now the question is, would you linearly extrapolate that relationship?

FIGURE 1

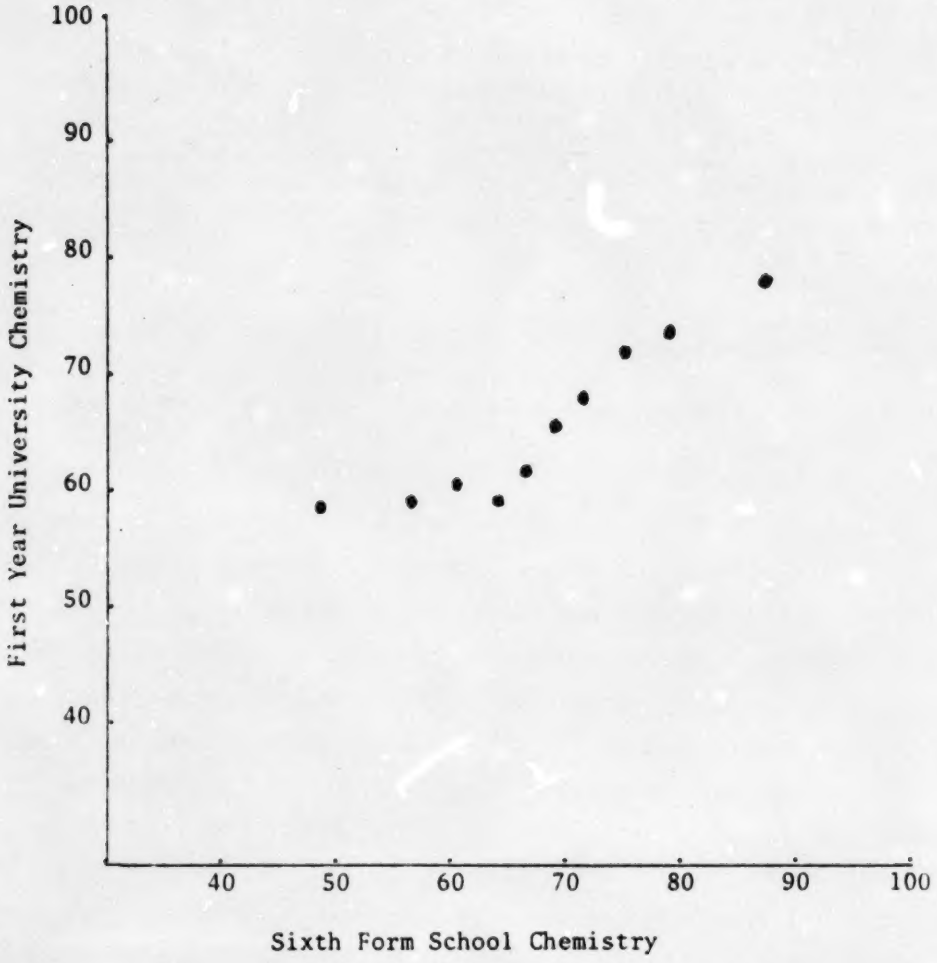
1972 Engineering Students
Mean Scores for Deciles (N = 239)
= 0.44



In Figure 2, 6th Form chemistry scores are plotted against first year chemistry scores, for the same type of binning. The correlation coefficient is 0.49. Once again, would you linearly extrapolate that, to make inferences about the performance of people who have not been selected? I would like to place a question-mark against that procedure as a means of measuring efficiency and of comparing various selection devices.

FIGURE 2

1971 School - 1972 University (Monash)
Mean scores for deciles (N = 879) = .49



The other method that has been used, although not as commonly, is to say what would happen if the selection procedure was more stringent and look at people who actually got in, but who would have been excluded if the more stringent procedure had been used. I have two results nearly two decades apart. The first set of results (Table 1) are from Schonell, Roe

and Meddleton (1962) of the University of Queensland, relating to 1955. Their criterion was "making satisfactory progress" which, in fact, was either "finishing a degree without a break" or "finishing with one year extra time". If we exclude the bottom 20% based on a composite selection score, we see that the success rate improves from 68.5% to 71.8% - hardly a massive improvement. One ought to point out also that this would have excluded eighty students, forty-four of whom made satisfactory progress.

TABLE 1

1955 University intake at University of Queensland.
Percentage "making satisfactory progress" (i.e. pass all or fail only one subject at first year).

GROUP	MAKING SATISFACTORY PROGRESS
Total sample	68.5%
Total sample with "bottom" 20% excluded	71.8%

Source: Schonell, Roe and Meddleton (1962).

The other result comes from some work I did at Monash University based on the 1972 engineering intake and is presented in Table 2. Of the total enrolment 77.8% continued to second year. If we exclude the bottom 25% based on the H.S.C. selection score, we would have had the "massive" improvement rate of 1.6%. The table also includes graduation rates as a percentage of those who entered first year and as a percentage of those who got over the first year hurdle. It is interesting to note that excluding the bottom 25% would have led to the exclusion of some sixty-four students, thirty of whom actually graduated in engineering. One has to ask whether we can justify the use of this kind of selector on the grounds of its "effectiveness".

Research data are now becoming available on the performance of students admitted under special entry schemes (unmatriculated mature students, disadvantaged students, and so on) - people who previously would not have gained entry under the current selection formulas. It seems that they perform at least as well as, if not better than, ordinary students.

TABLE 2

1972 Engineering intake at Monash University.
(a) Percentage "continuing to second year" (sometimes after repeating first year) and (b) graduated by 1975.

GROUP	CONTINUED TO SECOND YEAR	GRADUATED BY 1975	
		(As percentage of intake)	(As percentage of those proceeding to second year)
Total intake	77.8	55.6	71.6
Total intake with "bottom" 25% excluded	79.6	58.6	73.6

Of course, we have to be careful in interpreting this because of the way they were selected: it may be that their good performance is just a function of the different selection procedure used for them. But they are people who would not have got in under the present selection procedures so it gives us some measure of what would happen if we were to admit people who are excluded by current selection procedures.

The school-university interface is the next issue. There was a time when 6th Form, or the final year of secondary school, was preparation for university: it was called "Matriculation" meaning that it was concerned with university entrance. Those days, unfortunately, have gone. While some of us in tertiary institutions might like to turn back the clock, I do not think we have that option open to us. At present, in Australia, approximately one-third of all students who complete the final year at school go on to university. If the course being given to all the students who do 6th Form at school is a course based on what is needed in order to go to university then two-thirds of them are doing a course that is not relevant to them. That is one of the arguments against current selection procedures that the teachers, at least, have been putting. Some people interpret the flight from the physical sciences to biology, and from the humanities to social studies, and from accountancy and economics to consumer education, as an indication that students do not see the relevance of subjects such as chemistry, physics, mathematics, English and so on, to their everyday life.

It is necessary to see things from the students' point of view or from the schools' point of view: there are strong arguments about the backlash effect of tertiary selection - especially content-based tertiary selection - on schools.

I might mention here an interesting study by Fensham at Monash. He surveyed a group of chemists, members of the Royal Australian Chemical Institute, and asked them to list ten socially significant chemicals and chemical processes. He then produced a list of these and looked at the content of chemistry courses for the Victorian H.S.C. and in the United States: he found that these chemicals and chemical processes were hardly mentioned in any of those courses. It is not hard to see why, of course. Those courses were set up (the American ones were set up post-Sputnik) in an attempt to train professional scientists— school chemistry was seen as preparing people to go on and become professional scientists. But if one were to write a syllabus for schools in, say, chemistry that did not bear any direct relationship to tertiary education, then one might be tempted to include things such as the production of sulphuric acid or ammonia, or the petrochemical industry, as socially important chemical processes— but they do not appear currently in chemistry courses. Of course, it is not clear that this is due to the influence of current selection procedures on the schools but some secondary school teachers argue that it is. (You may be aware that the Victorian Secondary Teachers Association is planning to boycott the 6th Form examination in 1979 or 1980).

It would be fair to say, on the other side, that it seems reasonable for the universities to expect that one of the functions of the secondary school is to prepare people for tertiary education— especially in areas like the sciences and engineering where students need to have an adequate background when they enter tertiary chemistry, physics and mathematics courses. While I agree with that position, I think we need to examine selection procedures to see whether they do in fact ensure that. If a student has a four-subject composite score around 350 then it is reasonable to assume that he would have a sound background, but I would want to question whether a score of 220 represents evidence of a sound background. If I can take a golf analogy: if someone goes round a golf course in 68 it probably means their putting was good but if they go round in 100 it is more difficult to infer that their putting was good.

So when we come to the argument that we must have a content-related selection procedure for the sciences because entering students need an adequate background, it is sensible to examine the current procedures to see whether, in fact, they do ensure the selection of entrants with an adequate background.

Let me move to the "fairness" set of arguments. Any selection procedure is fair to some and unfair to others. In Victoria, the VSTA has proposed a ballot for tertiary selection and that would not be fair - not fair to the people who would have gained 380 in a four-subject composite score and then have been assured of entry into university. But is it unfair to other people? We have to realise that this question of fairness is a value question and we have to identify what our values are.

Let me give a few interesting examples. Three years ago, the medical faculties of Monash and Melbourne Universities changed the selection formula that they used. They decided to count only one mathematics instead of two and made English compulsory. As a result, the proportion of females entering medicine at Monash rose from 33% to 48%. One can ask the questions: Was that fair to the males who have previously taken two mathematics in their fifth and sixth years to find that they were not going to count? Was it fair to all the females in the past who had been excluded? I do worry about the arguments on this question which seem to assume that what we do at the moment is fair and anything else ought to be measured against that.

This medical selection procedure gives an interesting example of the influence of selection procedures on secondary schools which was discussed above. School students who were aiming for medicine changed over to doing biology and general mathematics instead of two mathematics because only one mathematics was going to count, so they might as well do something else. Now, what happens to the students who do not get into medicine and who then have to go into science? Without both mathematics they are severely handicapped. The implications of selection procedures for the schools can be very important.

I will not say much about administration issues, but they involve an important set of arguments, particularly relating to the time when selection takes place and the period when students are notified that they are going to be accepted for tertiary institutions. If we propose a selection procedure based on interviews and it takes us three months to interview all the applicants and thus we cannot tell them until March 1st whether they are going to get in or not, then we might want to reject that selection procedure on administrative grounds.

From the institutions' point of view, selection procedures can be disastrous in terms of forward planning. When up to 50% of students change their enrolment pattern between February and March it can make things very difficult. In the study done by Katz and Powell (1975) on admissions, this was one of the important issues raised.

Amongst other issues, and there are many that could be raised, I have found an interesting argument put by Don Anderson. He suggested that we need to see selection as being the analogue of initiation rites in primitive cultures: selection is the entry into the various higher levels of our society and therefore it ought to be a kind of trial by fire. Now while one can smile about that, I think that when you talk to people there is a general view that it ought to be difficult, that it ought to be hard for students to get into universities because they are getting the reward of entering into the higher parts of our society. Maybe all the logical, educational, philosophical arguments that one can put, just fall aside if people hold that kind of view. And certainly I think that some of the arguments against open entry relate to the view that it should be difficult to get into tertiary institutions.

There is one other thing I want to say and that relates to moves to centralise selection procedures in which every institution operates through the one selection group. What happens as a result is that the only public information that arises from a student's secondary education is what course he gets into at what institution. And therefore there is tremendous pressure on students to accept the highest course and institution that they are offered on the basis of their selection score. Now consider the example of a student who lives near a teachers college and who wants to teach and who decides to go to that particular college. But then he gets 380 in his four-subject composite and he can get into medicine in Sydney University --

and the only public information about his performance in secondary school is where he gets in. In the Golf Club or the Mothers' Club, Mum can say what she likes about his score of 380. Everyone else is going to say "Oh Yeah, but he only got into 'Upolipotpot' Teachers College". There is a real danger under that system that tertiary selection can become the prize of secondary education and I think that has very serious implications for the professions, for the sorts of people who would get into the various professions, as well as for the students.

I would like to end with the question: Is selection the issue? In universities we have had 20 years of the comfortable situation where there have been more students than places so that we have been able to pick and choose, but we now need to consider whether that situation will continue. There seems to be a fair bit of evidence from the Borrie Report and elsewhere, of a levelling out of the tertiary participation rate and a drift from the sciences. Some institutions, and certainly some departments, are not going to be in a selection game at all: they are going to be in the advertising business of trying to get students. Engineering and science faculties are already beginning to reach this stage. And maybe when they think about selection they may need to think about how they can get more students, how they can introduce selection procedures that will get more students rather than the opposite. And that raises the question: if we are stuck with the current procedure are we going to continue to go down and down the list until we reach 200 out of 400, and then if we still have not filled our quota, do we go still further down the list? Or do we say: should we be looking for alternative students even if they lack the traditional kind of background? That is an interesting question which I will leave with you.

KATZ, F.M. and POWELL, J.P. (1975) Alternative Admission Systems for Tertiary Institutions in N.S.W. and the A.C.T., Sydney, Tertiary Education Research Centre, University of New South Wales.

SCHONELL, F., ROE, E. and MEDDLETON, I.G. (1962) Promise and Performance: A Study of Student Progress at University Level, Brisbane, University of Queensland Press.

SOME ASSUMPTIONS IN UNIVERSITY ADMISSIONS

J. BEAUCHAMP

West used the term "selection" in his address and I have chosen the term "admissions" because I believe selection is only one aspect of the question "Who may or may not go to university?" The current selection process was graphically illustrated for me in a cartoon showing a young person looking with surprise at a companion who had just been splattered into the ground by a huge mallet; in the next picture the surviving young person says "I've just been selected".

The author of an article in College and University about the role of the Admissions Officer says that Admissions Officers are seen as computer-bound rejection officers playing roulette with human lives. He was Assistant Dean of Admissions and said his boss defined him as a mouse in training to be a rat. I, too, in the Australian system which places much less status on Admissions Officers than the American, am a mouse in training to be a rat. But I don't like it! An Admissions Officer should not over-emphasise machines and numbers: he should evidence a concern for individuals, for human lives as they pertain to and fit into education programmes rather than computer programmes. Therefore, the assumptions I have chosen to talk about are wider than those of the mechanics of selection. I think admissions should be concerned with placement rather than who to select and who to reject and this implies:

1. Knowing what other institutions besides your own have to offer and where courses of study lead, both vocationally and in self-development.
2. Knowing enough about the applicant to be useful as a guide.

The assumptions I have chosen to examine have been discussed by people much more knowledgeable and eminent than myself. The retiring Vice-Chancellor of Monash University, when he addressed the 1975 Annual General Meeting of the Graduate Careers Council, said that he considered the assumptions underlying current selection devices to be either no longer valid or becoming less valid every day. Perhaps one can only make these attacks on myths held dear by colleagues when one is about to retire,

although it must be admitted that public debate on education has been very much more open recently— and I am not referring only to The Bulletin. It might encourage innovations of a structural kind and facilitate re-thinking if we were active in examining our systems for their bad effects as well as in defending them for their good. One of these is the admissions system and the first assumption I wish to consider is the following: that school leavers seeking to enter university degree courses have realistic career aspirations.

At present we act as though all we need to know about an applicant is his Higher School Certificate result and the order of his course preferences. We are not interested in the applicant as a person even though the evidence shows that many school leavers are uncertain about their vocational interests and intellectual aptitudes. One fact in evidence of this is the high failure and drop out rate in first year courses. At this University about one in twelve fail first year and another one in twelve drop out before they fail: these are estimates. A Flinders University survey reports an over-all drop out rate of four in twelve.

There is also the evidence that many young people apply for a university place and when they get it, defer it and then do not take it up. In 1976 we granted close to 900 first year deferments in a total enrolment of 4,343. Of those who defer only 25% finally enrol in the course they defer. Eve Barrett of TERC carried out a study of those who did not take up the deferred offer and found that most of them were in other courses elsewhere. None regretted their decision to defer entry. Of those who accept an offer of a place here, about one in six want to change it to a lower preference or to a course not listed as a preference in their applications.

I have a classic example which really does not support my argument but it is worth telling: it has stuck in my mind for two years. A young fellow came to me after he had received his offer in the first round and said "I've got my third preference, but I don't really want it - I'd like my fourth." We allow eight preferences and they can change as often as they like. In England they only allow five and they do not let them change: that is a very good idea because it makes applicants think carefully before they list their preferences. So I said " All right,

you have got all the prerequisites for it, you have an aggregate that would have secured you the course if you had put it first but I can not give you a place at the moment until all the acceptances are in and we know whether we are overfilled or underfilled. So come back next Tuesday and I will be able to give you the answer." When he came back I said to him: "We can give you your fourth preference, but in the meantime we have had an underfill on most courses and we are now able to make you an offer for your first preference." I thought he would be very pleased at this but he said "Oh, no, I do not want that, I want my fourth preference". So I said "Why did you put down the three in front of it?" He replied: "The teacher said to put the hard ones first because we would not get those anyway".

Another factor evidencing uncertainty is that we must make twice as many offers to fill the places we have. When students enrol and do not fail or drop out there are, on the evidence of a number of published studies, substantial numbers of students who are in their courses because others wanted them to be, and because they themselves made no decision — they were carried along to university.

The lack of factual and helpful information available to students in the United Kingdom has been criticized recently in The Times Higher Education Supplement. The glossy brochures produced by universities are not seen as providing the sort of information on which well-founded decisions can be made. It is not enough for each institution to extol its own virtues: what the applicant needs is realistic advice over a wide spectrum of institutions and courses. Our system, it seems to me, is also open to this criticism.

Let us now look at another assumption: that a university degree leads to employment appropriate to the qualification. Does an undergraduate education provide knowledge useful in the jobs graduates take? The evidence is that for many it does not. The figures for graduates unemployed six months after graduation in Australia are given as 10-15% in 1974. In Britain the 1974 figure was 2.8%; in 1975 this went to 5.3% and the estimate for 1976 is 18%. A Norwegian survey shows 19.6% in 1974, 28% in 1975, and the figures are expected to be higher for 1976. The same study indicates that 50% economically active graduates considered

their degree to be relevant to their job. The Australian data for 1974 show 27% of graduates being in jobs they believed inappropriate to their qualifications. In Britain a study of 4000 graduates showed 38% claiming that their education had been useful in relation to current job skills, 50% somewhat useful and 12% not at all useful. Half the women and two thirds of the men in this survey chose their career only after completing their degree. The authors concluded that there was little link between field of study and choice of job.

The Minister of State for Higher Education in the United Kingdom is reported in THES as telling a conference of educationists and industrialists that many students in degree courses would be of greater use to society if they had gone to work rather than to university. He argued for more comprehensive counselling, starting at age 13, and covering work, further and higher education and with careers advice provided in collaboration between education and industry. There are two problems here. One arises from making full-time university studies the norm, thus encouraging unrealistic career expectations and actually depriving young people of the practical preparation they need in the kind of employment areas their aptitudes suggest. The second is the growing use of degree qualifications by employers as a selection device when there is no relation between the qualification and the job requirements. Apart from the fact that, as Christopher Jencks has said, this is a hell of an expensive selection device, it is putting educated people in jobs not usually reserved for the educated and may generate a good deal of discontent. In America one estimate indicates that between one third and one half of all American graduates in the next decade will have jobs formerly filled by less qualified workers. One of the recommendations of the 14th Semestrial Conference of the Standing Conference of Rectors and Vice-Chancellors of the European Universities (April 1977) was that Governments and Labour organisations should create new jobs for secondary school leavers and that job qualifications should be revised to eliminate or decrease the requirement of university education for jobs that do not need it.

On the other hand, if the idea that education contributes to personal development is not a myth, it might develop a labour force that is autonomous and innovative, perhaps even productive, but one that may demand more participation in the organisation and direction of the work processes.

The third assumption is this: that in selecting among applicants for entry to university we know what we are trying to assess.

Selection is a question of what, as well as how, we are trying to assess. The literature seems to have concentrated on the "how": the cognitive tests applied in the selection process, including HSC results, only at best tell us if a person has a potential to take a degree and not whether the person will. There is now the idea of including non-cognitive measures to sort out those who lack motivation and persistence and hopefully thus reduce the failure and wastage rate at university.

The point is, however, despite whatever value measures of personality variables may turn out to have, the criterion for the success of the selection process would continue to be the graduation of those who are selected. But perhaps a student's success does not rest on obtaining a degree in the traditional way? Very little research has been carried out using long-range success and academic curiosity as criteria. Perhaps, in the absence of such knowledge, universities should regard their function as being to provide the opportunity for study and intellectual growth and not, as is presently emphasised, to produce graduates.

Open admission would not cost as much as it might first appear. We are beginning to realise that soon we will be chasing students: some tertiary institutions already are. Eligible applicants applying through the Metropolitan Universities Admission Centre for places in the three universities in Sydney have increased by over 1000 a year from 17,000 in 1972 to 24,000 in 1977. The number of eligible applicants not offered a place has not changed very much and stands at 3,454 in 1977. We have to make about twice as many offers in order to fill available places and it would be reasonable to assume that half of the 3,400 who did not get an offer would not have accepted one if they had. Open admission might then mean about 1800 additional enrolments in the three universities. Because the number of students who sit final examinations is substantially less than the number who are counted as enrolments, about 10% less, with a total initial enrolment of 11,000 in the three universities the number of additional students would not be so great as might first appear. Couple that with the forecast in the Borrie Report of the decreasing size of the

18 year old cohort and open admission becomes a real possibility if universities and CAE's continue at their present size.

The last assumption I will consider is: that selection processes based solely on measures of academic merit are justifiable.

My reading of the literature has brought me to the conclusion that universities have neglected their social obligations and have opted for administrative convenience by using selection procedures based solely on ranking in order of assessed academic merit. The attempt to justify this approach has resulted in the literature on selection being repetitious in its concentration on measures which are principally of cognition and which test only a small sample of a student's abilities and knowledge at a single point in time and which conceive of students as existing in a social vacuum. I refer you to a review of this literature by Win McDonell: Testing for Student Selection at Tertiary Level, published by ACER in 1976. She sums up her review of studies carried out during the past 30 years by drawing attention to their similarity, and notes that the same low correlations, poor predictions, high failure rates, criticisms and suggestions recur again and again. The individual is never considered, nor are those rejected by the selection process included in any study.

In the area where selection actually occurs there is good reason to doubt the reality of any differentiation we make between students on their aggregate marks. Even if we do recognise the differences in marks as real, because of low correlations (which in the definitive studies are not much better than 0.4) we find that at the section in the aggregate ranking where most students are accepted or rejected the admissions efficiency (defined as percent of correct decisions, that is, correctly admitted or correctly rejected) is only 3% better than random selection with 90% acceptance, 7% with 80% acceptance, and 10% with 70% acceptance.

These are only a few of the assumptions that those concerned with admissions have been acting on, and I hope to have made clear that the time has come when we can no longer simply accept their validity and usefulness.

THE ANU'S ADMISSION PACKAGE

R. CAMPBELL

May I begin by declaring a very special interest in being able to discuss these questions with you, an interest grounded in the fact that we in the ACT are escapees from the NSW School System.

If one lives in Canberra one breathes the peculiarly scented air of politics whether one likes it or not, and I think the point at which I must start is a political event which occurred in August 1971. In that month the then deputy leader of the Liberal Party, Mr John Gorton, ran a series of articles in The Sunday Australian which led to his dismissal from the McMahon Cabinet and the reinstatement with Cabinet rank of the man who is now Prime Minister.

You must recognise that it is difficult to be a Federal Minister for Education, because, under our Constitutional arrangements, education is a matter that formally rests with the States. So, if one is a Federal Minister for Education and one wants to do something quickly in order to re-establish one's ministerial reputation, the Territories are the only places where one can do it. Whether that interpretation is correct or not, the fact is that in November 1971, Mr Fraser accepted a suggestion from the Territorial branch of his Department that a scheme for restructuring Secondary Education in the ACT should be looked at by a Committee of interested parties.

This Committee seemed to me to emerge in a rather strange way. On 11 November 1971 Departmental representatives held consultations with Secondary Principals, the Executive of the Secondary Teachers' Association, and the Executive of the ACT Council of P & C Associations, concerning the proposal. The Departmental discussion papers contained little more than a very general descriptive sketch of the proposal with little argument or detailed analysis of anything other than the numbers of students who might be affected.

These three groups refused to react, there and then, to the question whether this was a good idea, and the suggestion was made for a Committee to have a look at it. That suggestion turned into a Ministerially appointed Working Committee consisting of three representatives from ACT Principals, three from the ACT Secondary Teachers' Association, three from

the ACT Council of P & C Associations, three from the Department and two NSW School Inspectors — a Technical teacher was subsequently added. Through a series of accidents I ended up chairing it. I say "accidents", because the first meeting I attended I thought was simply a discussion group to advise on who should be on the Committee, only to find it was the Committee proper. I was then elected to be its chairman. The chairman was not named by the Minister; he was given no formal terms of reference. I think it was a committee that just happened.

The background to these moves was that the ACT had been an educational colony of the NSW Department of Education. Buildings were financed and built by the National Capital Development Commission, but the teaching staff and educational services came from the NSW Department, which was then reimbursed by the Federal Government. The citizens of Canberra had been becoming increasingly restive about the education system thus imported. A citizens' committee chaired by Sir George Curry in 1967 had proposed that there should be an independent ACT Schools System, which would not be run in the highly centralised, highly bureaucratic fashion that is characteristic of State education systems. Nothing particular came of that, at least immediately or directly. There had then been a lot of agitation for a full-scale inquiry into the education needs of the Territory, and it is generally believed that a proposal for such an inquiry went to Cabinet in 1970, only to be turned down - there were no votes for the government in Canberra.

So, given that background and the denial of an educational inquiry, this Committee that was to look into the Department's very sketchy proposal, in fact turned into an Inquiry; people put in submissions of that kind, and it turned out to be a fairly substantial operation. We met for 14 months every Tuesday night in term for four hours. In the end, we produced a unanimous report which went into much more detail than had the Department's few pages. The Committee recommended that secondary education be restructured, as had been suggested by the Department, so that High Schools be now four-year and not six-year institutions, and that 5th and 6th Form should be offered in a new institution called a Secondary College. The reasons that led to this are, as always, very complex, but let me just over-simplify greatly by drawing your attention to a couple of facts which weighed heavily with us.

One was that if one takes the date on which an average Australian is born and plots that against the number of years of formal full-time education that person has, one gets a linear correlation. The gradient is 1 in 18, i.e. someone born in 1900, on the average, had a little over 8 years formal education; somebody born in about the 1960's is receiving up to something like 11 years formal education. The Wyndham Committee of 1957-58 never thought to ask this kind of sociological question. They thought what they were providing was a 4-year package that was the basic educational requirement necessary for an Australian citizen, and an extra two years which would be strictly pre-matriculation years, preparing for entrance that small minority who go on to universities. If they had looked at this they would have seen that there was no hope of holding to that 4 + 2 conception. As it has turned out, all they were doing was providing another year of schooling in order to allow this line to continue on its way. This is my favourite illustration of what the German philosopher Hegel called 'The Cunning of Reason'.

Now, opposed to that, there is another well documented trend which goes in the other direction. This line has a gradient of about 1 in 30. That is the line which correlates the date at which someone is born and the number of years it takes to reach adult functioning biologically. There are a number of measures of that (e.g. height and weight), but the simplest measure is the age of menarche in girls.

Interestingly, Tanner reports some finding from the 1840's that sits on that line. Working class girls at that time in Manchester, on average, attained menarche at about 16 years 8 months, and 'young ladies' at 15 years 10 months. That class distinction appears to have now disappeared. Of course, if one projects this line one produces nonsense. Projected into the past we would never have been born; projected the other way we will have adults springing full-fledged from the womb! Nevertheless from what I understand, there does not appear to be any sign that this trend is flattening out. I think it is a very interesting question that I would like the biologists to be able to answer and to explain what it is that produces such a profound biological change. None of the explanations I have seen dealing with nutrition seem to be sufficiently plausible to explain it.

Compounding with that biological change is the fact that some — one must emphasise some — social roles are now being conceded earlier. At age 18 one can now vote for a politician in parliament, get married without permission, buy a beer, enter into a vast range of contracts and hire purchase arrangements, and so forth. And yet, because of those two conflicting trend lines, these same 18 year old adults are contained within the generally custodial relationships of a traditional school system.

A consequence of the trend towards higher retention was that we found in Canberra, in 1972, that for every 100 places planned for 1st Form (i.e. year 7) we needed to plan 64 places for 6th Form (i.e. year 12); and that something like 98% could be expected to go on to the end of 4th Form (year 10). That figure is, of course, much higher than the Australian average. Somebody once said, "Canberra is above average everything; above average income, above average educational status, above average suicides", and certainly it has above average retention rates.

This meant that we faced in a very severe form a problem that West touched on earlier. Our problem is that there is a large proportion of students in 5th and 6th Forms — the alleged Wyndham matriculation years — who have no reasonable expectation of going on to universities. The problem remains even when one takes into account the fact that there is a rather larger proportion who do go on to universities from the ACT population than is the Australian average. That was the basic problem we had to address.

As part of the work of the Committee, I commissioned the Education Research Unit at ANU to undertake a survey of the attitudes of 4th, 5th and 6th formers in Canberra towards their schooling. This survey was conducted by Don Anderson and David Beswick in March 1972, and covered 4th, 5th and 6th formers from every Government high school in the ACT. It provided serious evidence of hostility and alienation. In view of the conflict I have described, I think it is not surprising that a significant proportion of these students, who were pursuing courses the point of which they did not understand, should feel very hostile and critical towards their teachers. The Working Committee published as an Appendix the survey report submitted by Anderson and Beswick to the Committee. But I ought to say that it was decided, after consultations with Mr Fraser, to report the survey material straight and cool. The students had written comments up the sides, and

in between lines, and on the back of the questionnaire. We were somewhat alarmed at the thought that, if all that material were published, it would produce such teacher hostility and alienation that the possibility of any constructive move would get caught up in political standoffs.

Anderson and Beswick found the results of that survey so interesting that on their own initiative they extended it to take in all non-government high schools in Canberra, a large sample of 5,000 students from Melbourne, students in Hobart who already had experience of a "College split" although the Tasmanian Matriculation Colleges are just that, (i.e. they have more precisely a matriculation orientation), and a very small sample from Sydney's North Shore picked somewhat to match in socioeconomic terms the Canberra population. (An inquiry to get a more representative sample in Sydney did not meet with approval.)

The second survey confirmed the general picture which had emerged. It suggested that there is some input towards alienation and hostility from the school system and the teaching service involved, which overlay the other factors that I have been touching on.

This led the Working Committee to the view, the unanimous view, that while the "College split" would not provide a solution to the problem — there are no such things as solutions in social planning — it might nevertheless provide an opportunity to allow a little more room, a little more flexibility, a greater opportunity for students to try to resolve constructively that kind of tension. For we judged that the other alternative, which would have been to impose quotas on entry into 5th Form more stringent than quotas to medical faculties, was socially and politically unacceptable.

Accordingly, the new secondary colleges which were recommended in our report submitted to the new Labor Minister for Education, Mr Beazley, in January 1973, tabled in Parliament in May 1973, and accepted by him then, have come into effect as from the beginning of 1976. And this year, for the first time, there will be no HSC examination in any Government high school or college in Canberra.

It was part of our view that, along with the "College split", there was a need to provide a much more flexible approach to the school curriculum. The traditional orientation of the upper years of secondary

schooling towards university entrance, valid as it is for some students, could no longer, in justice, be required of the whole system, for we were now dealing with a new population.

Once the Committee had agreed with this in principle, I then in August 1972 approached on behalf of the Committee the Vice-Chancellor of the ANU, the Principal of the Canberra college of advanced education, the Secretary of the Public Service Board and the Director of our Local Employers Federation, to ask "what would your reaction be, were the Committee to recommend and that recommendation be accepted, that there be no public external examination?"

The reason why I made the approach in these terms was prompted by the coincidence that the Education Research Unit had been conducting that year a series of off-the-record seminars at which Chairmen of previous Government Inquiries had talked about their experiences. It was interesting for me to sit in on those and to compare the different ways of operation, and the effect of different kinds of composition, of the committees. One of those speakers was the late Dr Radford, who had chaired the Committee which recommended the abolition of the HSC examination in Queensland. Radford told us that his Committee had written their report and presented it to the Minister without consulting the University of Queensland, and he was horrified to find that the first reaction of the University was to say - "Since students are graded in marks 1 to 7, we will simply set some aggregate mark, (I believe it was 96) totalled from the 20 units studied over the previous four semesters, as the entrance level required for the University of Queensland". As indeed Professor W.J. Campbell has since reported, there are a number of bugs in the Queensland system which have come about because it is operating in a way that was not expected by the Radford Committee. Having listened to that, it seemed to me that the only sensible thing to do was to try and prejudge what the reaction of bodies would be so as to know what the likely effects would be, and thus not to be quite so vulnerable to "the Cunning of Reason". Hence, my approaches.

The ANU had for two or three years previously been admitting some students (the safer ones) under an early admissions scheme on school recommendations, and had found that these were about as good a selection mechanism as the examination itself. Teachers, by and large, had shown

themselves to be quite clever at guessing how many marks their students were going to score. So the ANU was not much perturbed at the thought of there not being an examination.

The Public Service Board, which is the largest employer in Canberra, had replied that it had its own clerical examination anyway. So long as the school system would certify that students had studied for six years at a reasonable level, that would do to put alongside their own examination.

The local Employers Federation were somewhat nervous about the suggestion - they asked whether the two systems might run concurrently for some time. They had learnt to work the HSC system, more or less, and they wanted time to learn how to read the new system. But they could see that there might well be advantages for an employer seeking to take on students at the end of Year 12 if the student presented with a transcript which carried a good deal more information about what the student had done, not only in which subjects but how well in which subject, and what other extra-curricula activities and non-academic courses had been included in the whole mix of a student's school career. They could see it could well help an employer pick the student who was going to fit best into the particular job for which the employer was seeking someone. So they felt a bit ambiguous about the proposal, but were prepared to live with it.

It was the Canberra College of Advanced Education, which was then very new and needing to establish position and status, that was most uptight about the suggestion, but even it was prepared to give it a go.

Perhaps I should also add that the proportion of students coming out of the ACT school system, as it then was, who sought tertiary entrance outside the ACT, was about 5%. The question we had to face was: If we go it alone, that could well make it more difficult for that 5%; but are the needs of the few involved sufficiently strong as to require that the whole of the ACT system be set up in a way that will keep it fitting neatly into the kind of requirements set by medical and veterinary faculties at Sydney and Melbourne Universities? It seemed that that would not be just.

We then recommended that, with the introduction of what I have called the "College split" students graduating from high schools at the end of Year 10, and from the colleges at the end of Year 12, should be

provided with a transcript or profile of their studies together with a scholastic aptitude test score. There were some on the Committee who thought that even going thus far was pandering too much to the requirements of those who were external to the school system. But that view did not prevail.

Now, following the Government's acceptance of the major recommendations of the Committee, there developed, immediately thereafter, action to split the ACT system away from NSW. Mr Fraser had earlier decided in principle on such a move in November 1971, but had bided his time. The McMahon Government went out, as you know, in December 1972, but the move was carried forward by the new Whitlam Government. An ACT Interim Schools Authority came into being from the beginning of 1974.

I should digress to point out that we no longer have a standard Australian Department of Education for the Territory. Each high school and college, and indeed each primary school, is governed by a Board on which there are teacher and parent representatives, and student representatives at the secondary level. The system as a whole is governed by what is now Statutory Authority (it has been a full Authority as from 1977). It now consists of 15 members, some from the teachers' sector, some from the parents', some from the preschool, two from the ACT Legislative Assembly, six ministerial nominees, of which I am one. So, this new-style of Education Authority administratively speaking, is operating a new-style secondary system.

The Interim Authority, which existed for three years (1974 to 1976 inclusive), recognised that it had to do something about the certification students would receive at the end of the school programme when the changes took effect. So they set up what is called the ACT Schools Accrediting Agency. It consists of five people: the Chief Education Officer, Professor Richard Johnson from the ANU, Dr John Keeves from ACER, a Secondary College Principal and Dr Stewart Houston* from the Canberra CAE.

It is integral to our approach that syllabuses should no longer be prescribed from the system centre. The important thing is the exchange between teachers and students. So curricula have to be fleshed out at the college level, although there is need for a resource centre which can provide curricular materials and experience to support teachers in

*Dr Houston has now been replaced by another person from the Canberra CAE, since he became a full-time member of the Tertiary Education Commission.

developing curricula. In fact, the approach to curriculum development is not so very different from the sort of conception that we as university teachers have been following, without worrying about it, as par for the course. Teachers thus develop the curricula to be taught in their own colleges and have it approved by their College Boards. Sometimes they are completely new courses; sometimes they are straight lifts from existing courses, such as old NSW HSC, but trimmed a little, dropping elements felt to be irrelevant, adding others. Or, sometimes they are lifted from other courses developed elsewhere in the world. "Web of Life" for example, is commonly offered in the biology areas.

These approved courses, developed at the college level, then are submitted to the Accrediting Agency. The Accrediting Agency has set up a series of panels. Fifty-nine panels, indeed were set up, involving over 300 people, who then assess the course proposals and the ability of the College to sustain that course proposal. A great deal of work then takes place in refining it. I served on one panel, for example, and no proposal went straight through. They were always referred back with suggestions for revision, and a great deal of that kind of interchange in developing proposals has occurred.

It is pertinent to report here an account of one of these accrediting panels given by a friend of mine who served on it. At its first meeting the school teacher members apparently said: "The first question is: what do the University and the College require?" The University and College representatives on that panel had to spend some time explaining that that was not the right question. The right question is: what are the appropriate criteria which a sound educational course in the subject, at this upper secondary level, should meet? Only subsequently does the question arise as to what relevance that might bear to the University.

One interesting consequence of this accrediting operation, as it has worked out, is that there has been much closer, much more creative liaison between working academics in the various disciplines of the University and the teachers in the schools. Yet I am assured again and again by people from the secondary college end that this assistance is offered without producing the old complaint of tertiary domination. Indeed, the feeling has been that many of the teachers were putting up far too ambitious courses which

needed to be toned down to something that could reasonably be handled and reasonably be expected of students at that level. So at this point, despite the occasional misgiving, I am reasonably satisfied that there is a much more creative and constructive relationship between the University and the upper secondary teachers than there has ever existed in the past.

Again, subject to exceptions, the impression I am deriving, now that the secondary colleges have been going about 18 months, is that, by and large, the students are working harder than they would have worked in the old 5th and 6th Forms, and are enjoying it a great deal more.

Now, I think it is important to have spelled out those kind of educational reasons that led to this new approach. And I must say that I feel somewhat proud that my University has been prepared to take the risk of entering into that kind of creative relationship. I feel this precisely because of the anxiety that has been expressed in many quarters, not least in a number of universities, at the trend away from external public examinations in secondary education. There are people, in influential positions, who believe that the appropriate response is for universities, either separately or together to set their own matriculation examinations. My University, at any rate, has set a firm course against such a response and we do so in the knowledge of the dubious validity and reliability-- in the two technical senses of those words— of the HSC as an admissions selector.

The fact that there is no measure which will satisfy demands of fairness is no doubt upsetting to those with a proper sense of social justice, but there is no evidence which I have seen to suggest that a university-set matriculation examination would fare any better.

I have dwelt on the development of the new procedures in some detail because I gather that the whole background and history of the move might be of greatest interest. But let me finish by spelling out what the formal admission requirements for the ANU will be. This will affect, of course, those who seek admission for 1978.

We will admit NSW school leavers who have completed the NSW HSC examination achieving some minimum specified aggregate of marks in their best 10 units drawn from the list of approved subjects (with a few exceptions). The relevance of this is that the ANU takes in a large number of students from outside its immediate region. The ANU is one of the very

few universities in Australia that is not a local university at the undergraduate level.

For the ACT college students, what the ANU will require is that they must have studied 30 term units in a pattern which includes at least four majors and one minor, or three majors plus two minors. A major is five sequential units, each unit consisting of at least 12 weeks study of at least four hours per week. Of the 30, 27 must have been accredited by the ACT Schools Accrediting Agency. That is to say, three of the 30 can be simply what we call "registered units". They might be in arts and crafts; they might be in driver education. A number of the colleges have fully equipped motor maintenance bays. Registered units might be in that. There could be offered a vast array of such units which allow the students— and students said that they very much sought this— to find some more creative, not necessarily academic, activities. The ANU has said that we think it is a good provision. Students should come with a somewhat broader self-development along with requisite academic levels.

Of the 27 accredited units, 18, i.e. three majors and one minor, must have been accepted by ANU as having "a high degree of conceptualisation", i.e. a student could well pursue a course that is regarded by the Agency as an educationally sound course, but at least some parts of that course may not be theoretical and academic in the narrow sense of those two adjectives.

In addition, the applicant must have attained a satisfactory standard in the use and comprehension of English, and should overall have a level of achievement within his or her school or college studies acceptable to the ANU. Finally a student should submit his or her score in the recent Australian Scholastic Aptitude Test.

Accordingly, the ANU will take into account five factors in assessing a student's application:

- the total performance over two years (the 30 units),
- a Tertiary Entrance Score which is calculated on the student's best three majors and one minor after inter-school and college moderation of school assessments by use of ASAT,

- a recommendation from the principal concerning the student's suitability for tertiary studies,
- an assessment of the student's ability in English language skills,
- the Scholastic Aptitude Test score (though that is not to be given prime importance).

That is what we will look for from the normal college leaver.

What will happen in practice is that those who come through with a high Tertiary Entrance Score and formally satisfy the other criteria, will be automatically admitted by the Admissions Officer. Those whose T.E.S. falls disastrously below a certain level will be rejected by the Admissions Officer, and those who come in the lump somewhere around the notional cut-off point will then have all these other factors looked at very carefully, and individual decisions will be made on each case.

Adults, whose initial continuous secondary schooling ceased at least three years before they want to enrol, can qualify for admission in four ways. One is by gaining in one year the required aggregate in six units of the approved subjects of the NSW HSC examination, with a qualification on that. Secondly, by gaining satisfactory results in one years study in three three-unit accredited daytime courses at a secondary college, which have a high level of conceptualisation and which have been approved by the University for admission purposes, plus a certificate of competence in English, plus an ASAT test score. Thirdly, by gaining satisfactory results in one years study in three three-unit evening courses adapted by the secondary college from its accredited and approved daytime courses. Or, fourthly, by gaining satisfactory results in two years study in three major courses and one minor at a secondary college. The ANU will take into account, for that fourth group, the same five factors as for the ordinary leavers. Let me say in relation to that last point, that part of the conception of the new secondary college is that the enrolment of mature adults in them should be positively encouraged. One reason for that, of course, is that it is very hard for a teacher to handle 17-18 year olds as if they were kids, when there is a mature person of 50 years in the same class. Also, the possibility of part-time study at a secondary college is possible. One can also enter the ANU on the basis of studies undertaken at another tertiary institution, considered on an individual basis.

That is the ANU's new admissions package. It is, I believe, as enlightened as it is flexible. We are now awaiting with eager expectation, and a little trepidation, to see how the first ACT secondary college graduates fare at university level.

SELECTION OF THE 1978 MEDICAL STUDENT INTAKE AT THE UNIVERSITY OF NEWCASTLE

K. MITCHELL

Before discussing how we intend to select students for entry into our new medical faculty I shall briefly describe the curriculum in order to provide a context for what follows.

We have a five year programme which is radical by Australian standards and innovative even in world terms in that it goes further than what is being done at McMaster. It is based upon problem-solving in groups. Students will be required to learn to solve or manage clinical problems under supervision and will thus develop the problem-solving skills that are essential to medical practice. Staff were in agreement that what they were producing was an undifferentiated medical graduate. This tended to shape their thinking in terms of the skills these undergraduates should have at the end of five years of training. They agreed that the student needs to be able to go about problem-solving, to know how to use the resources available in order to clinically solve a problem which presents in his general practice.

However, the scientific skills will be no less important than they are in the usual curriculum: it is just a question of how these scientific skills and clinical skills will be acquired during the course of training. There is also the input of the behavioural sciences in addition to the other kinds of basic sciences normally and traditionally associated with medical training. It is important to bear in mind that the Faculty is attempting to train students who can problem-solve and who are equally at home in the community as well as in hospitals. These recommendations have shaped the criteria for the selection of students.

Well, why then do we want to select?

Selection is based on a belief that multiple criteria are preferable to the single criterion of academic achievement. The Faculty felt that the problems with the latter are two-fold in that medical education and practice demand a range of personal skills which may or may not be associated with academic achievement, and secondly, the aggregate mark gained at the end of high school may be a very imperfect measure of the varying intellectual skills required for such a problem-based programme. And since it seems

necessary that selection occur because there are many more applying than can be accepted, then the methods adopted by the Faculty must be demonstrably fair to all candidates. It was decided that there were four major grounds on which selection should be based.

(1) The wish to produce effective medical practitioners involving a very great emphasis upon the interpersonal skills which are necessary for effective practitioners of medicine.

(2) The need to enhance the educational process and minimise student wastage, which is always a matter of great concern to faculties of medicine since it costs an enormous amount of money to train one student. In addition to acquainting applicants as fully as possible with the structure and objectives of the course, the Faculty wanted to ensure that the personal skills and attitudes which the course is designed to develop are at least nascent within the student. Because of the nature of the educational programme there is a need to ensure that the student has the potential to play an active part in the individual and group problem-solving process and to share responsibility for the implementation and assessment of the course. There will be a lot of peer assessment and students will have to work in small groups. There are no lectures and there are no courses, so they have to work together in the small groups and that requires certain qualities in the students.

(3) The recognition that the Hunter Region of N.S.W. has some kind of entitlement to special consideration.

(4) The Faculty also wanted to acknowledge that society is entitled to a reasonable return on its heavy investment in medical training.

To sum up the four objectives identified by the Faculty:

(1) the production of effective medical practitioners,
(2) the enhancement of the educational process and the avoidance of student wastage,
(3) the recognition of regional interests,
(4) ensuring a reasonable return on society's investment.

Those are the four major bases for establishing the selection procedure.

Now I turn to the methods of entry. Half of the places (the available places in 1978 will total 64) will be allocated to candidates with the highest level of academic achievement. They will just be ranked from 1

to 32 according to the traditional methods of selection in faculties of medicine current at the moment. The remaining 32 will be selected by using multiple criteria.

First, there is academic achievement and potential and this will be made up of the HSC aggregate marks for students coming straight from school, students with tertiary education and mature age students. All students, regardless of the basis of their admission, must be capable of handling the intellectual challenges of medical training. The Faculty will accept people who have had tertiary education if they have been performing at about credit level: this will be accepted as indication of high academic potential. The HSC aggregate will also be broadened from the top 3% to the top 10%. I am talking now of the multiple criteria people: they will come from the top 10% in terms of HSC aggregate. The academic potential of mature age students who meet the admission requirements for the University, but who have neither a weighted HSC aggregate equal to the top decile nor credit passes in tertiary level subjects, will need to be assessed on other grounds. Those other grounds are currently being identified.

The second area of academic achievement and potential is in higher mental abilities assessment. There are, of course, standard intelligence tests and scholastic aptitude tests and they are sometimes used in selection procedures. However, where high academic achievers are involved these tests are less useful than school grades as predictors of future academic success. The Department of Psychology at the University of Newcastle has developed an instrument to discover the extent to which the subject thinks formally about problems in which correlational and implicational inferences are involved. That was an important consideration for the Faculty because a lot of what the medical practitioner and the basic medical sciences, or the sciences that contribute to medicine, have as data, are correlational data from which they have to make inferences of various kinds. So the capacity to think along these lines would seem to be an attribute of some use in medical training. This particular test is designed to measure that capacity.

Then there is the potentiality for creative thinking; and the instrument that has been selected for identifying this is that developed by Torrance in 1965. He defined it as the process of becoming sensitive to problems, deficiencies, gaps in knowledge, missing elements, disharmonies, and so on. Identifying the difficulty, searching for solutions, making guesses or formulating hypotheses and possibly modifying and retesting them. So you

can see that kind of test measuring that kind of concept fits in very neatly with the kind of training we are preparing. So the Faculty wants to measure that as one indication of academic potential.

In addition to that, other evidence of academic potential or abilities will be obtained from teachers. These abilities will include intellectual curiosity as demonstrated by an analytical questioning approach to problems and issues. Assessments will be based on the teachers' ratings of the way in which students go about their work. Self-reliance is demonstrated by the frequency of use of libraries and other educational resources. Flexible thinking is demonstrated by an imaginative approach to problem-solving and willingness to try different solutions, and verbal ability both written and oral. Reports on the applicants' intellectual characteristics will be explored further in the course of the main interview.

We also have a batch of criteria relating to personality characteristics, particularly those characteristics relevant to medical practice. I shall briefly list the most important of these. The capacity for empathy is clearly very important. We plan to test this using videotapes that have been developed by T.E.R.C. These can also be used to measure another characteristic that is relevant to medicine: supportive, encouraging behaviour. We ask applicants how they would respond to anxious or troubled people presented on videotapes, exploring how the student responds under pressure.

Other characteristics that will be looked at include perserverance, flexibility of views and attitudes, personal integrity, ethical principles and consistency. The Department of Psychology at the University of Newcastle has also developed an instrument called a "Moral Dilemmas Test" which will be used to assess the applicants' response to finely balanced moral issues or choices. In each case the subject will be required to indicate a course of action and his reasons for choosing that course of action.

In addition to that, another characteristic that will be measured will be tolerance of ambiguity and the ability to make decisions. Another is self-confidence and interpersonal relationships.

There are some general attributes as well, such as age and sex. These will be taken into account because of the heavy social investment in medical training. The upper age limit for new admissions will be 35 years but there will be no lower age limit. Young students who are interested in deferring will be able to do so. They will be able to gain admission and defer for at least one or two years. A number of mature age students will

be selected in the early years of the programme because the Faculty sees it as important that a number of mature age students enter in order to provide support for the younger students in the later years of the programme. Females are expected to occupy something like 35-40% of the intake. There are no subject prerequisites: the Faculty will provide the resource materials to remedy any specific deficiencies in educational background.

The number of students admitted from the Hunter region as defined by the Regional Organisation Act of 1972, will be at least proportional to the number of eligible applicants from the region itself. And eligible here means that the candidate has satisfied the academic achievement requirement. Another requirement is that the students must be sound physically and mentally: they will have a comprehensive medical examination designed to include the relevant dimensions including the psychiatric. Physical handicap will not necessarily be a disadvantage if suitable arrangements can be made for the student to pursue the usual kinds of training required of the medical practitioner. Following all of that there will be an interview in which a lot of these things are re-assessed, and then there will be a second round of interviews. A number of the candidates will also be re-interviewed by an independent team of interviewers. The interviewing will be carried out by teams of two, one member of the team being a Faculty member and the other a member of the community.

The selection process will begin each year on 1st July by which date applications must be submitted. Only 120 will reach the interview stage - and we are talking now only about the multiple criteria people who will make up 50% of the intake. In the final assessment of these 32 students the weightings given to academic achievement potential, personality characteristics and general attributes, will be equal. In other words, personality characteristics and general attributes will supply about 67% of the assessment and academic achievement and potential only about one-third.

All applicants will go through the same selection procedure, including those who are selected on the grounds of very high academic performance, so no student will know the basis on which he was admitted.

TERTIARY SELECTION AND THE SCHOOLS*

J. FREDERICH

Just recently an examination that has no connection with tertiary selection, that does not even provide prerequisites for entrance into years 11 and 12 - the School Certificate examination - was varied by the removal of all outside controls in all subjects except English and Mathematics. The outcry against that has been substantial. Admittedly the moderating procedures were felt to be very unsatisfactory, but there is a strong demand for a return to an external examination at that stage. So that when we come to the external examination for tertiary entrance we are up against, I feel, an almost insurmountable problem. We do have strong, I might even say fierce, competition for a limited number of university places. I know that there are many more tertiary places now in C.A.E's, but they are regarded as the second best: many people look on them as the consolation prize.

In an educational system as large as that of N.S.W., it is hard to envisage a procedure other than an examination which can be seen to be fair in deciding that fierce competition. I do not want to buy into the controversy over the scaling procedures in the 1976 H.S.C., but that is symptomatic of the feeling about the importance of an examination, about it being seen as the fairest way.

The efforts by the Board of Senior School Studies, the body that conducts the H.S.C. examination and lays down the prescriptions for it, to provide in year 11 and 12 for other than university entrants have not been substantial but they have been made and they have come up against some obstructions. The first of them is the provision of 2 Unit A courses in nearly all subjects. 2 Unit A courses are, by definition, courses that do not lead to further study of that particular subject at tertiary level, and for that reason there is a tendency to shy away from them. Of the universities in this State there are several that provide in their matriculation requirements for a limitation on the number of 2 Unit A courses that may be taken: English and one other is generally the maximum. There has been a very unfortunate result in regard to one

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* A fault in the recording equipment resulted in the exclusion of the early part of this contribution.

of them. The 2 Unit A science course is undoubtedly the best science course that could be taken as a part of a general education by someone not specialising in science, far more so than a single chemistry, physics or biology course. But because of this 2 Unit A restriction many students avoid taking it. Indeed, for some non-university courses and para-medical courses the 2 Unit A science course is probably a better preparation than biology. But this classification of 2 Unit A causes people to be frightened off them, and marks given in such courses have been a cause of complaint in the recent controversy. The Board is again looking in detail at the courses to see how they fit the prescription, but there have been complaints. For example, a student who is not doing well in modern history 2 Unit moves down to 2 Unit A and scores better marks than a youngster who used to beat him in the other course. The 2 Unit A courses are not serving the purpose that they were meant to serve.

The other attempt is the provision for schools themselves to develop and teach what are called "Other Approved Studies", i.e. other than the subjects in which examinations and courses are provided by the Board. But these are also subject to the same kind of limitation. There are many of them in use, and there are many good ones, but when it comes to Year 12 you will find someone doing either three periods, that is one unit of one of these courses (or of general studies) with the idea that it will help to make up the 11 units that he has to offer, but he will be stuck with the 10 units that he is examined on. There will be none discarded. It is not only the limited number of students who will get into university who are influenced, it is the very large number whose hopes and aspirations are to get in and who cannot be persuaded otherwise. Anyone who has had anything to do with the counselling of senior students has often heard parents say: "Oh, but John has to do Maths 1 and Maths 2. He wants to be an Engineer." And it is very hard to get them to think that having shown the complete incapacity to cope with that, he simply must think about something else instead of engineering. That is, of course, quite apart from the fact that "He wants to be an engineer" very often means "Dad wants him to be an engineer". And in counselling, the possibility of university entrance is dominant.

We have had mentioned today, and we have heard in other connections, some of the alternatives, and I did promise you a pessimistic approach and an intention of throwing cold water. With regard to the ACT experiment I certainly think we should watch it with a great deal of interest but the relatively small size of that Authority and the special nature of that community, the unusually high proportion of parents with a very deep and informed interest in education tends to make it a special case. The sheer size of N.S.W. makes the situation here very different. One of the other speakers, John Beauchamp, pointed out that there is a limit on entry to medicine because of the prestige attaching to the profession. There is only one university where you can do veterinary science. The tendency for the requirements of medical and veterinary science faculties in Sydney to dominate the whole of the system is undesirable.

We had that brief mention earlier of the Queensland system and how its' proposer, the late Dr. Radford, was dismayed when he found what use was to be made of it by universities. But there is still a need to find a way that is seen to be fair for resolving this strong competition for places. Where you have a system of school assessment moderated locally by a conference of teachers you tend to get every school jealously watching every other school in its particular consortium to see that they are not getting a few more of their youngsters into university. You get, every time a teacher hands back a piece of work, the attitude that every mark he has withheld tends to be robbing that boy or girl of a chance to get to university.

With regard to the broadening of the curriculum you get the question asked of every worthwhile activity, an interest activity: "Is it going to count for our assessment? No! Not interested." I can see no easy way around the position at present although I was very interested in some of the suggestions made by earlier speakers and I would like to try your patience by mentioning them again. I do not know what hope there is for one of these ideas, that of having jobs looked at and of making it plain that many jobs do not need anyone with a H.S.C. to do them. Many jobs do not require graduates. But if such statements were issued I gravely doubt that they would have any effect in our present climate.

I will simply put to you the problem as I see it: that in N.S.W. with the current attitudes of parents and the general public, and a lot of teachers, who in my opinion should know better, it is hard to get away from the idea that to determine university entrance you must have something that is fair and seen to be fair, and that is an examination on a clearly defined syllabus. It is therefore hard to see how the majority of the Year 11 and 12 boys and girls will not be dominated by that, mainly because of their own and their parents hopes that they will succeed in gaining entry into a university.

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